

bead dispenser attached to the striping machine in such a manner that the beads are dispensed immediately upon the completed line.

The completed line shall be a uniform cross section.

NOTE: The paint traffic stripe shall not be applied when there is moisture on the pavement that would cause a poor bond between the paint and the pavement, and application shall not be permitted when atmospheric temperature is below 40°F (5° C) and falling.

854.05. METHOD OF MEASUREMENT.

Traffic stripe (paint) will be measured by the each unit or linear foot (meter) of 4 inches (100 mm) wide traffic stripe placed or the equivalent 4 inch (100 mm) stripe necessary when a narrower or wider stripe is specified on the Plans. Where arrows, words, and symbols are placed, they will be measured by each unit. Arrows shall be counted by each head.

854.06. BASIS OF PAYMENT.

Accepted traffic stripe (paint), measured as provided above, will be paid for at the contract unit price as follows:

- | | | |
|-----|------------------------------|---------------------|
| (A) | TRAFFIC STRIPE (PAINT) | LINEAR FOOT (METER) |
| (B) | TRAFFIC STRIPE (PAINT) | EACH |

Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

SECTION 855 TRAFFIC STRIPE (PLASTIC)

855.01. DESCRIPTION.

This work shall consist of furnishing materials and placing thermoplastic compound or preformed plastic tape markings on the roadway in accordance with these Specifications and in reasonably close conformity with locations and dimensions shown on the Plans or established by the Engineer.

855.02. MATERIALS.

Materials shall meet the requirements of Section 711.

855.03. EQUIPMENT.

- (a) **Extruded Application (Thermoplastic).** Apply the material to the pavement by the extrusion method wherein one side of the shaping die is the pavement surface and the other three sides are contained by, or are part of, suitable equipment for heating and controlling the flow of material.

NOTE: Extrusion of the material above the pavement surface will not be permitted.

All parts of the equipment which come in contact with the material shall be easily accessible for cleaning and maintenance. Conveying parts between the main reservoir and the shaping die shall not be allowed to clog up. All mixing and conveying parts up to and including the shaping die shall

maintain the material at the plastic temperature, and assure the continuous uniformity in the dimensions of the stripe. The equipment shall be so designed to insure uniform film thickness in the range of 90 mils (2.38 mm) minimum to 188 mils (4.76 mm) maximum.

The shaping die shall include a cutoff device remotely controlled to provide clean, square stripe ends and to provide a method of applying skip lines.

NOTE: The use of pans, aprons, or similar appliances which the die overruns will not be permitted.

Apply the top dressing of glass spheres at the rate of approximately 1 pound per 100 feet (1.5 kg per 100 m) of 4 inch (100 mm) wide line and in a manner which will firmly imbed them into the line surface at least 1/2 the diameter of the larger gradation sizes.

- (b) **Mechanical Application (Preformed Plastic Tape).** Install preformed pavement line markings with a mechanical applicator which shall be capable of placing pavement lines in a neat, accurate, and uniform manner. The mechanical applicator shall be equipped with a film cut off device and with measuring devices which automatically and accumulatively measure the length of each line actually placed to within a tolerance of ± 2 percent.

855.04. CONSTRUCTION METHODS.

- (a) **Surface Preparation.** In order to insure maximum possible adhesion for both AC and PC surfaces, clean off all dirt, glaze, grease, curing compound, or other foreign materials from the surface where lines are to be applied. The pavement surface shall be dry.

On all AC and PC surfaces that have been in place over 12 months, or that have either existing pavement markings or have had the pavement markings removed, apply a two-part epoxy primer sealer (50/50 blend) to the area to be striped. The primer sealer shall be compatible with the plastic material to be used and the surface to which it is applied.

Pavement markings which fail to provide a uniform appearance or which fail to be clearly visible during the day or night shall be corrected in a manner acceptable to the Engineer and at no additional cost to the Department.

The removal of existing striping will be at the discretion of the Engineer and will be measured and paid for under Section 859.

To insure the satisfactory performance of plastic pavement markings, new portland cement concrete pavement shall be sandblasted to remove the curing compound from the surface on which pavement markings are to be applied. Sandblasting may be done seven days after placement of the concrete surface unless otherwise directed by the Engineer. Payment of this operation will be included in Subsection 855.06.

On all portland cement concrete surfaces and on asphalt surfaces in place over 12 months, apply a liquid seal coat to the area which is to be striped. The seal coat shall be the type that is compatible with the plastic material used and the surface to which it is applied.

Do not place plastic pavement markings over longitudinal joints unless special written authorization is given by the Engineer for necessary exceptions.

- (b) **Application of Markings.**

- 1. **Hot Applied Plastic Pavement Markings.** Apply hot applied pavement markings straight and true by the extrusion die method. Give lines sharp edges, uniform thickness, good adhesion,

and uniform reflectance of a high level. To insure the best possible adhesion, install the compound in a melted state at temperature of 400°F to 450°F (204° C to 232° C) measured at the pavement surface, and in accordance with the manufacturer's recommendations.

Apply hot applied thermoplastic markings only on clean dry pavement having a road surface minimum temperature of 55°F (13° C) and rising with a windchill factor of 45°F or higher.

The drying time shall be defined as the minimum elapsed time after application when the stripe shall have and retain the characteristics required and after which time normal local traffic will leave no impression or imprint on the new stripe. The minimum drying time shall not exceed two minutes at 50°F (10° C) at a maximum relative humidity of 70 percent when applied at 188 mils (4.76 mm) thickness or one minute when applied at 90 mils (2.38 mm) thickness.

Thermoplastic material used under this Specification shall be so compounded and applied as to retain for the life of the stripe the original characteristics of the bond to the surface, ability to resist distortions by traffic impact or normal climate changes, and resistance to natural discoloration.

The thickness of the dry thermoplastic material shall comply with the table below:

<u>DESCRIPTION</u>	<u>STANDARD-LINE THICKNESS</u>		<u>THIN-LINE THICKNESS*</u>	
	<u>MIN.</u>	<u>MAX.</u>	<u>MIN.</u>	<u>MAX.</u>
LANE AND STOP LINES	120mils (3mm)	188 mils (4.8mm)	70 mils (1.8mm)	125 mils (3.2mm)
EDGE, GORE AND DIAGONAL LINES	90mils (2.4mm)	188 mils (4.8mm)	70 mils (1.8mm)	125 mils (3.2mm)
WORDS, ARROWS AND SYMBOLS	120mils (3mm)	188 mils (4.8mm)	70 mils (1.8mm)	125 mils (3.2mm)

* Usage: Roadways with less than 5000 ADT, 4 inch stripe only, no words or symbols.

2. *Cold Applied Plastic Pavement Markings.* For pavement markings which are preformed of reflectorized plastic material and applied cold to the surface, coat them with a factory-applied, pressure-sensitive adhesive.

The material shall adhere to asphalt and concrete surfaces when applied according to the manufacturer's recommendations at surface temperature of 65°F (18° C) and rising. If the markings must be applied when the surface temperature is below 65°F (18° C) but not below 50°F (10° C), the markings are to be applied in strict accordance with the manufacturer's recommended procedures and/or other special instructions.

NOTE: The application of the reflectorized plastic markings shall be without the use of heat, solvents, or extra adhesives of any nature except that a surface sealer is required on portland cement concrete surfaces as indicated in these Specifications.

3. *Inlaid Installation of Preformed Plastic Tape.* When the inlaid method is to be used, apply the markings after the newly-placed bituminous concrete pavement has been adequately

compacted and when the bituminous concrete pavement has attained a temperature range of 125°F to 155°F (68° C to 52° C).

Inlay the preformed pavement markings into the bituminous concrete surface by means of a mechanical roller. The mechanical roller shall be of sufficient weight capacity to inlay the preformed pavement marking to a minimum depth of 65 percent of the material thickness and to not more than 80 percent of the material thickness while the temperature range of the bituminous concrete is within 125°F to 155°F (68° C to 52° C). In the event the inlaid preformed pavement markings are distorted by these operations, fail to provide a uniform appearance, or are installed improperly, repair or replace the inlaid pavement markings at no additional charge in a manner approved by the Engineer. Install the inlaid preformed pavement markings in the finished surface of the bituminous concrete pavement work prior to conclusion of each day's work.

855.05. METHOD OF MEASUREMENT.

Traffic stripe (plastic) will be measured by the linear foot (meter) of 4 inch (100 mm) wide traffic stripe material actually placed or the equivalent 4 inch (100 mm) wide stripe when a narrower or wider stripe is specified in the Plans. Arrows, words, and symbols will be measured by each unit installed. Arrows shall be counted by each head.

855.06. BASIS OF PAYMENT.

Accepted traffic stripe (plastic), measured as provided above, will be paid for at the contract unit price as follows:

- | | | |
|-----|--------------------------------|---------------------|
| (A) | TRAFFIC STRIPE (PLASTIC) | LINEAR FOOT (METER) |
| (B) | TRAFFIC STRIPE (PLASTIC) | EACH |

Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

SECTION 856 CONSTRUCTION ZONE PAVEMENT MARKINGS

856.01. DESCRIPTION.

This work shall consist of furnishing materials and placing pavement markings on detours and roadways on which traffic is maintained during construction in accordance with these Specifications and in reasonably close conformity with the locations, lines, and dimensions shown on the Plans or established by the Engineer. The use of paint, removable pavement marking tape, or other construction zone pavement markings will be as specified on the Plans or as directed by the Engineer.

856.02. MATERIALS.

Traffic stripe materials shall meet the requirements of Section 711. Other construction zone pavement-marking materials shall meet the specifications noted on the plans.